Space Weather Forecast

Issued on Saturday 8 March 2025 at 12:09 Local

This forecast provides a four-day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of Moderate class flares (Minor-Moderate radio blackouts) throughout. Minor/Moderate geomagnetic storm (G1/G2) likely Days 1/2.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity reached the Moderate level due to a single low-end Moderate-class flare at 07/2100UTC from a decaying small spot group in the southeast quadrant.

There are currently six sunspot regions currently on the visible solar disc. A moderately large bipolar group, now located in the southwest quadrant, is the most significant region but is undergoing decay particularly in its intermediate and trailing spots.. The second largest region is located toward the southeast limb, and consists of a moderately large lead spot with some small trailer spots. Remaining spot groups are small and either stable or in decay.

A CME (Coronal Mass Ejection), which followed the M1.6 flare at 07/2100UTC from AR4016, has been modelled and gives a low chance of a glancing blow later on Day 3 (10 March). No other Earth directed CMEs were observed in available imagery.

Solar Wind / Geomagnetic Activity: Solar winds showed the onset of fast winds from the anticipated coronal hole. Winds were fairly steady at mainly slightly elevated levels 390-450km/s, until around 08/0500 UTC. Speeds then gradually increased to the range 450-500km/s. The Interplanetary Magnetic Field was mainly Weak until around 08/0500 UTC then increased to mainly Moderate. The north-south component was largely Weak and variable, but longer periods of southward orientation developed after 08/0500 UTC, occasionally reaching Moderate. Geomagnetic activity was Quiet to Unsettled (Kp 1-3).

Energetic Particles / Solar Radiation: No solar radiation storms were observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is expected to be generally Low, with a chance of further isolated Moderate-class flares.

Solar Wind / Geomagnetic Activity: A CME, associated with the M1 flare from AR4016 at 07/2100 UTC, has a low chance for a glancing blow later on Day 3 (10 March), although the bulk of the ejecta will pass below Earth orbit.

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Earth is now connected with the fast winds from the anticipated coronal hole. Slightly elevated solar wind speeds are expected to increase further to Elevated to Strong. Geomagnetic activity has increased to Unsettled conditions, with periods of Active to G1/Minor Storm (Kp 4-5) likely during the rest of Day 1 (08 March) and into Day 2 (9 March), perhaps with a chance of isolated G2/Moderate Storm (Kp 6). On Days 3 and 4 (10-11 March), occasional periods of Unsettled to Active (Kp 3-4) are likely, with a chance of G1/minor geomagnetic storm (Kp 5). However, overall activity should gradually weaken as the solar wind speed slowly wanes.

Energetic Particles / Solar Radiation: No solar radiation storms are expected.

Geomagnetic Storms

Geomagnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	60	70	40	20
Strong	G3	No	10	10	5	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X-Ray Flares

X-Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 (M Class)	Yes	40	40	40	40
Very Active	R3-R5 (X Class)	No	5	5	5	5

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Solar Radiation Storms (High Energy Protons)

Radiation Storms Probability (Exceedance)	Level ($cm^{-2}sr^{-1}s^{-1}$)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	**≥ S1**	No	5	5	5	5
Very Active	**≥ S3 ***	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and/or 50 MeV ≥ 10pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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